REMARKS

Reconsideration and allowance of the above-identified application are respectfully requested.

Claims 1-76 are pending, wherein claims 1, 28, 36, 63, 66, 69, 72 and 75 are independent.

Independent claims 1, 28, 36, 63, 66, 69, 72 and 75 have been amended to incorporate the feature of a plurality of groups of locations (electrodes), wherein locations (electrodes) within a group are electrically connected to each other, and wherein each group of locations (electrodes) is electrically insulated from all other groups of locations (electrodes). In addition, dependent claims 2, 19, 22, 23, 25-27, 29-31, 33-35, 37, 41-43, 47, 62-65, 67, 70 and 73 have been amended to incorporate the feature of a plurality of groups of locations (electrodes). Support for these amendments can be found at least on page 10, lines 1-12, page 13, lines 3-27 and page 20, lines 1-10 of the present application. No new matter has been added by these amendments.

In addition, the dependency of claim 25 has been changed to depend from claim 23, the dependency of claim 38 has been changed to depend from claim 37, claim 45 has been amended to add an ending period, and the dependency of claim 68 has been changed to depend from claim 67. These amendments do not narrow or otherwise limit the scope of the respective claims, and are not made for any purpose related to patentability. No new matter has been added by these amendments.

The remaining original claims 3-18, 20, 21, 24, 32, 39, 40, 44-46, 48-61, 71, 74 and 76 are unchanged.

Applicants respectfully request that the attorney docket number associated with the above-identified application be changed from "M-12004 US" to "215248.00004".

Applicants respectfully request that the Patent Office acknowledge the Revocation of Power of Attorney, new Power of Attorney, and Statement Under 3.73(b) documents submitted to the Patent Office on October 16, 2003. Copies of these documents, along with a copy of the date-stamped postcard showing the October 16th filing date, are enclosed for the convenience of the Patent Office.

In the first section of the Office Action, the Patent Office asserts that the Information Disclosure Statements (IDSs) filed on March 29, 2002, and September 10, 2001, fail to comply with 37 C.F.R. 1.98(a)(2), because the IDSs did not include a copy of each of the references listed respectively therein. However, contrary to the assertions of the Patent Office, Applicants respectfully submit that each of these IDSs were submitted with copies of the references listed in the respective IDSs. Applicants enclose copies of the date-stamped postcards showing that copies of the 21 references listed in the IDS of March 29, 2002, were submitted to the Patent Office with the IDS of March 29, 2002, and copies of the 82 references listed in the IDS of September 10, 2001, were submitted to the Patent Office with the IDS of September 10, 2001. As the Patent Office has acknowledged receipt of all references listed in these IDSs, it is respectfully submitted that Applicants are in full compliance with 37 C.F.R. 1.98(a)(2). Therefore, Applicants respectfully request that the Patent Office acknowledge the references listed in the IDSs of March 29, 2002, and September 10, 2001.

In the third section of the Office Action, claim 1-76 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Nolting et al. (U.S. Patent No. 4,832,431, hereinafter "Nolting"). This rejection is respectfully traversed.

Nolting does not disclose the combination of steps recited in independent claim 1 of the present invention. For example, Nolting does not disclose the step of applying a plurality of voltage levels at a corresponding plurality of *groups* of locations, wherein locations within a group are electrically connected to each other, and wherein each group of locations is electrically insulated from all other groups of locations.

According to exemplary embodiments of the present invention, an electric field that changes across a distance in space is synthesized, by applying at several locations voltage levels that are independent of one another. According to an embodiment, two or more voltage levels can be applied at a number of locations successively one after another along a predetermined direction, thereby to synthesize an electric field that changes along the predetermined direction. Application of voltage levels independent of one another at non-adjacent locations allows an electric field that is synthesized to be made periodic or aperiodic. The voltage levels can be oversampled, although the voltage levels need not be oversampled if, for example, the to-be-synthesized electric field is aperiodic. According to exemplary embodiments, a number of electrodes or locations in space that are adjacent to one another can carry the same voltage level. Thus, a plurality of electrodes or other locations in space can be grouped together to form a plurality of groups. The electrodes or locations within a group can be electrically connected together, while each of the groups can be electrically

insulated from each other. Voltage levels can then be applied to each of the plurality of groups to synthesize the electric field.

Nolting discloses an apparatus for reset-free polarization in phase control in an optical waveguide in which the propagation constants of an optical wave propagating in a defined direction and the propagation constant of an optical wave propagating in the same direction and polarized orthogonally relative to the other wave differ from each other at a prescribed wavelength. The apparatus includes a plurality of defined function locations that are arranged in the defined direction along a distance and are divided into path sections of equal period lengths and arranged at distances following one another. According to Nolting, the same plurality of locations for modifying the polarization condition and the phase are located in each of the path sections, where the fixed period length is equal to or is an integer multiple of the beat length of the two waves, i.e., TE and TM modes. The state of polarization and phase of the two waves (TE and TM mode) are tunable at each location for modifying the polarization and phase, and the amount of tuning of the polarization and phase is defined by variable coupling factors individually allocated to each location.

According to Nolting,

> *Individual* electrodes are arranged above this strip waveguide 10 at a distance of S=N=20 subdivided into m=5 path sections of identical period length $L=\Lambda_0$ and the *individual* electrodes are referenced E_1 through $E_{N=20}$ in the defined direction R from left to right in FIG. 1. The *individual* electrodes E_1 through $E_{N=20}$ are arranged equidistant and their lengths in the direction of the waveguide 10 is selected to be as short as to that, respectively, n=4 *individual* electrodes form a path section A_1 through $A_{m=5}$. The distance between the centers of two *individual* electrodes thus is L/4. A selected voltage U_i can be applied to every *individual* electrode E_1 by way of associated leads Z_c and this voltage U_i is defined by the . . . equation [shown at column 4, line 59]. In this manner, the *individual*

> electrodes E_1 through $E_{N=20}$ define the functional locations F_1 through $F_{N=20}$ of the POLTRA. [Nolting, column 4, lines 44-63 (emphasis added)]

Thus, according to Nolting, the electrodes arranged above the strip waveguide are controlled *individually*, with the voltages applied to *individual* electrodes. [*see also* Nolting, column 5, lines 14-21] Thus, it is respectfully submitted that Nolting does not disclose the step of applying a plurality of voltage levels at a corresponding plurality of *groups* of locations.

Since Nolting does not disclose a combination of steps including the step of applying a plurality of voltage levels at a corresponding plurality of *groups* of locations, wherein locations within a group are electrically connected to each other, and wherein each group of locations is electrically insulated from all other groups of locations, it is respectfully submitted that the Nolting does not anticipate the subject matter of claim 1.

Independent claims 28, 36, 63, 66, 69, 72 and 75 recites similar steps or features to those discussed above with regard to claim 1, and are, therefore, patentably distinguishable over Nolting for at least those reasons stated above with regard to claim 1.

Dependent claims 2-27, 29-35, 37-62, 64-65, 67-68, 70-71, 73-74 and 76 variously depend from claims 1, 28, 36, 63, 66, 69, 72 and 75, and are, therefore, patentably distinguishable over Nolting for at least those reasons stated above with regard to claims 1, 28, 36, 63, 66, 69, 72 and 75.

For at least the foregoing reasons, therefore, it is respectfully submitted that Nolting does not anticipate the subject matter of claims 1-76. Accordingly, reconsideration and withdrawal of these grounds of rejection are respectfully requested.

In the fourth section of the Office Action, claims 1-76 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Delorme (U.S. Patent No. 5,838,714, hereinafter "Delorme I"). This rejection is respectfully traversed.

Delorme I does not disclose the combination of steps recited in independent claim 1 of the present invention. For example, Delorme I does not disclose the step of oversampling a representation of an electric field to be synthesized, to determine a plurality of voltage levels to be generated at a corresponding plurality of groups of locations in space, wherein locations within a group are electrically connected to each other, and wherein each group of locations is electrically insulated from all other groups of locations.

Delorme I discloses a wavelength tunable laser emission component that includes on the same substrate an active emission section and a Bragg section that includes a waveguide in which is formed a plurality of individual Bragg gratings corresponding to particular Bragg wavelengths. The waveguide has an electro-absorbent structure, the subsections of the Bragg section each being voltage-controlled. The laser emission wavelength is tuned to one or other of the Bragg wavelengths of these subsections according to control voltages applied thereto. However, it is respectfully submitted that Delorme I does not disclose the step of oversampling a representation of an electric field to be synthesized, to determine a plurality of voltage levels to be generated at a corresponding plurality of groups of locations in space.

Since Delorme I does not disclose a combination of steps including the step of oversampling a representation of an electric field to be synthesized, to determine a plurality of voltage levels to be generated at a corresponding plurality of groups of locations in space, wherein locations within a group are electrically connected to each other, and wherein each

group of locations is electrically insulated from all other groups of locations, it is respectfully submitted that the Delorme I does not anticipate the subject matter of claim 1 or render the subject matter of claim 1 obvious.

Independent claims 28, 36, 63, 66, 69, 72 and 75 recites similar steps or features to those discussed above with regard to claim 1, and are, therefore, patentably distinguishable over Delorme I for at least those reasons stated above with regard to claim 1.

Dependent claims 2-27, 29-35, 37-62, 64-65, 67-68, 70-71, 73-74 and 76 variously depend from claims 1, 28, 36, 63, 66, 69, 72 and 75, and are, therefore, patentably distinguishable over Delorme I for at least those reasons stated above with regard to claims 1, 28, 36, 63, 66, 69, 72 and 75.

For at least the foregoing reasons, therefore, it is respectfully submitted that Delorme I does not anticipate the subject matter of claims 1-76. Accordingly, reconsideration and withdrawal of these grounds of rejection are respectfully requested.

In the fifth section of the Office Action, claims 1-76 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Delorme et al. (U.S. Patent No. 5,581,572, hereinafter "Delorme II"). This rejection is respectfully traversed.

Delorme II does not disclose the combination of steps recited in independent claim 1 of the present invention. For example, Delorme II does not disclose the step of oversampling a representation of an electric field to be synthesized, to determine a plurality of voltage levels to be generated at a corresponding plurality of groups of locations in space, wherein locations within a group are electrically connected to each other, and wherein each group of locations is electrically insulated from all other groups of locations.

Delorme II discloses a wavelength-tunably distributed Bragg reflector laser having selectively activated virtual diffraction gratings including a semiconductor guide layer between two other semiconductor confinement layers of opposite dopings. A passive part of the laser has sections, each of which include a periodic arrangement spatially modulating the distribution of the carriers or the electric field in the guide layer when a current is injected into the p-n junction formed by the two other layers or where the junction is reverse biased to create a diffraction grating. Each section has an effective optical index cooperating with the corresponding diffraction grating in order to give a predetermined Bragg wavelength for the section. However, it is respectfully submitted that Delorme II does not disclose the step of oversampling a representation of an electric field to be synthesized, to determine a plurality of voltage levels to be generated at a corresponding plurality of groups of locations in space.

Since Delorme II does not disclose a combination of steps including the step of oversampling a representation of an electric field to be synthesized, to determine a plurality of voltage levels to be generated at a corresponding plurality of groups of locations in space, wherein locations within a group are electrically connected to each other, and wherein each group of locations is electrically insulated from all other groups of locations, it is respectfully submitted that the Delorme II does not anticipate the subject matter of claim 1.

Independent claims 28, 36, 63, 66, 69, 72 and 75 recite similar steps or features to those discussed above with regard to claim 1, and are, therefore, patentably distinguishable over Delorme II for at least those reasons stated above with regard to claim 1.

Dependent claims 2-27, 29-35, 37-62, 64-65, 67-68, 70-71, 73-74 and 76 variously depend from claims 1, 28, 36, 63, 66, 69, 72 and 75, and are, therefore, patentably

distinguishable over Delorme II for at least those reasons stated above with regard to claims 1, 28, 36, 63, 66, 69, 72 and 75.

For at least the foregoing reasons, therefore, it is respectfully submitted that Delorme II does not anticipate the subject matter of claims 1-76. Accordingly, reconsideration and withdrawal of these grounds of rejection are respectfully requested.

All of the rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance and a notice to that effect is earnestly solicited. Should the Examiner have any questions regarding this response or the application in general, the Examiner is urged to contact the undersigned at (202) 625-3547.

Respectfully submitted,
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